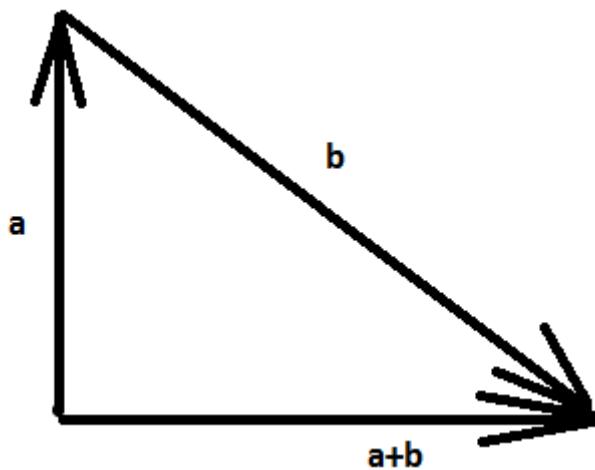


Answer on Question #46802, Physics, Other

Find the magnitude of a and the direction of b if a is to the North, b has a magnitude of 15m, and the resultant $a+b$ is 10m and due East



Using Pythagorean theorem

$$|b|^2 = |a|^2 + |a + b|^2 \rightarrow |a| = \sqrt{|b|^2 - |a + b|^2} = \sqrt{|15m|^2 - |10m|^2} = 5\sqrt{5}m \approx 11m$$

Now we can find direction of b :

$$\sin \alpha = \frac{|a + b|}{|b|} \rightarrow \alpha = \arcsin\left(\frac{10m}{15m}\right) \approx 42^\circ$$

Answer: magnitude of $a \approx 11m$

direction of b - $\approx 42^\circ$ East of south